

REMARKS

Favorable reconsideration of this application and the Office Action of April 28, 2008 are respectfully requested in view of the following remarks.

Claims 1-9 remain under consideration in this application.

Applicant, in their previous response pointed out that the USPTO has apparently entered the name of the first inventor incorrectly into the USPTO records. The correct spelling of the name of the first name of the inventor is Karol Križanovič, as shown on the attached copy of the executed Declaration/Power of Attorney previously submitted to the USPTO, and also as indicated on the PCT documents from which this US national Phase Application originated and requested correction thereof. However, the April 28, 2008 Office Action still has the incorrect first name of the inventor. Therefore, it is again respectfully requested that the Examiner advise the appropriate USPTO Department to correct the spelling of the name of the first inventor to "Karol Križanovič" in all the official USPTO records.

It is noted with appreciation that the section 112, second paragraph, rejection of claim 1-9 has been withdrawn.

The rejection of claims 1-9 under 35 U.S.C. 103 (a) as unpatentable over Alicot et al. (US 4,371,698) is again respectfully traversed. It is respectfully submitted that the disclosure in this for all the reasons stated in Applicant's previous response filed February 4, 2008, which reasons are repeated and incorporated herein by this reference thereto.

The PTO, in the April 28, 2008 Office Action, acknowledges Applicant's argument but states that "The method disclosed in Applicant's claims is different from the method disclosed in the original specification" and the Examiner then gives an interpretation of both methods to support that contention.

The 2-MBT raw product from batch 1 is crystallized from an aniline solution – does not mean that the crystallization is only from the pure aniline (even if it may also be possible), but is inclusive of it being from various solutions (i.e. from liquid phases from filtration, from washing), having aniline as their base.

After crystallization the reaction mixture is filtered and thus the so-called filter cake (which is a heterogenous mixture of solid crystals of 2-MBT and the remainder of liquid phase comprising about 60-70 % of solids) and the liquid phase – the filtrate from crystallization (aniline solution of 2-MBT with impurities).

The liquid phase from the crystallization is divided into three parts (F_{K1}), (F_{K2}) and (F_{K3}). One part of the liquid phase (F_{K1}) is removed out of the process. The second part (F_{K2}) of the liquid phase is returned to the synthesis reactor for the preparation of the further batch (batch 2) of the raw product and sulphur and carbon disulphide is added to the reactor. The third part (F_{K3}) is used for crystallization of subsequently produced raw MBT (batch 2) – this is described in step f).

The step e), which seems not to be quite understood by the examiner, only describes further purification of the crystallized 2-MBT in the pure aniline. Although the crystals of MBT in the obtained filter cake of the product after the crystallization are pure, they are not isolated. They are surrounded by the remainders of the impure liquid phase (F_K) – 30 to 40 % per weight of the filter cake and they might contaminate the product by the present impurities in further processing. Therefore, the filter cake of the product is stirred in pure aniline. This action (further purification, or refinement) washes out the remainders of the impure liquid phase from the intercrystalline space.

After the second filtration the filter cake (in fact only the mixture of pure 2-MBT and aniline) and the filtrate from the refinement (F_R) are obtained, the latter being used for crystallization of the **attached schematic diagram** of the application process at issue. In order to obtain the solid and dry commercial product, it is necessary to remove the aniline from the filter aniline cake – either by eroding in water or by distillation by water steam, or by other suitable methods. However, this is not the aim of the patent application at issue.

The examiner's arguments that **the crystallized 2-MBT obtained from step a) is purified the second time in the liquid phase (F_{K2})** is not correct, because the balance between MBT, aniline and the impurities was already reached and repetition of this action without adding a pure aniline or without removing the impurities will not cause any change.

The specification in the introduction to the Summary of the Invention does not teach a process different from that cited in the claims, as assumed by the Examiner, rather it only describes the starting batch (batch 0) of the preparation of MBT, comprising pure ingredients – because the used filtrates from crystallization (F_K) and refinement (F_R) are not yet available – it is the beginning of the process of preparation and no recycling of aniline phases has occurred yet (in the part

Examples it is the Example 1 – without recycling of aniline filtrates). In this regard we draw attention to the sentence in the end of the description: “After multiple recycling the composition of the system (reaction medium) will stabilize”.

In the examples of embodiments the whole process is well illustrated by Example 2, wherein in the heading there is written “after reaching a stabilized status by multiple recycling of parts of aniline filtrates” as well.

When comparing the Examples 1 and 2 it is obvious that the use of the recycled filtrates (without their distillation or condensation) increases the yield of the process without reducing the quality of the product.

As regards the Examiner's statement that the reference does not teach that the liquid phases are distilled to recover the unreacted starting material and the valuable by-products: aniline and benzothiazole (see column 4, lines 9-15 Applicants ask the following question: What would be the purpose of distilling of liquid phases? If a person skilled in the art is aware that distillation is a way of purification (like the crystallization), he/she should also be aware that these methods are not optionally interchangeable. For example, sugar is **crystallized** from water, but **not distilled**, although the water solution of sugar can be condensed by distillation so that the sugar could be crystallized in higher yield. Therefore, in order to purify the crystallized 2-MBT the distillation is not used, because the 2-MBT cannot be distilled (it has a high melting point like sugar and it decomposes) and Alicol et al. do not use the distillation directly, but only for obtaining the aniline from crystallization and washing solution. The reference from a French patent (FR 2565997) cited in Applicant's specification confirms that **almost all the filtrate is condensed by distillation(!)**, the condensed filtrate is used for crystallization of the last batch and the distillate from the condensation for washing. A small part of the filtrate (about 5 to 12 %) is separated from the process, aniline and benzothiazole are distilled therefrom, which are subsequently returned to the process and the remainder (2-MBT and impurities) is either removed or recycled (wholly or partially) in the synthesis reactor.

According to step (e) in the claims of the present Inventor's application there is applied “a final purification of the crystallized 2-MBT...”. The Applicants described that in order to obtain the pure MBT it is necessary to retreat the filter cake from the crystallization in pure aniline and filter it out. This is the last step of the claimed process. The further process of obtaining the commercial product (removing the remainders of aniline, drying, milling, additivation, pelletization) can be various and it is not intended to be a part of the claimed process.

As regards the note: The Applicants use the language "includes the following steps" in relation to the method claims, this language is considered to be open-ended and could include more steps than what is disclosed in claim 1. – The Applicants accept the note and have reworded the claims so that they include the expression "consists of".

It is the Examiner's contention "the batch and continuous processes are not patentably distinct, absent unexpected result (see *In re Dilnot*)". The claimed process is aimed at new technological steps, but not their continuation, although the fact that the process may be carried out continually in the tube reactor is undoubtedly an advantage of the process. From the point of view of technology the possibility of continuation of Applicant's process brings along not only financial savings in the equipment, but also simplifying the working process (operating of one tube reactor instead of the system of charging pressure reactors) and increasing the safety (elimination of the risk of pressure reactors).

It is respectfully submitted that the method recited in the claims is not different from the method disclosed in the original application. Rather, Applicant has only presented a different way of looking at the method while the method itself is the same.

Therefore, the USPTO is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claims 1-9 over the Alicot et al. patent since it neither discloses nor suggest the steps of the claimed invention and applicant's claims are supported by the original description and therefore their argument are pertinent.

The rejection of claims 1-9 under 35 U.S.C. 112, first paragraph, as not described in the specification is also respectfully traversed for the same reasons as set forth hereinbefore with respect to traversal of the Section 103 rejection.

The rejection of claims 1-9 under 35 U.S.C. 112, second paragraph, is respectfully traversed. Step (e) of claim 1 has been amended to clarify that the crystallized 2-MBT is in the pure aniline. Claim 3 has been amended to clarify that it can be from any of the three sources (F_K , F_R and pure aniline). The amendments obviate the grounds for this rejection and it is respectfully requested that the USPTO reconsider and withdraw this rejection.

The objection to claim 7 as being a duplicate of claim 6 is respectfully traversed. Claim 6 is much broader than claim 7 and therefore they are not duplicates. In claim 6 "wash separation" refers

to taking the filter cake out of the filter, putting it into the mixing container, adding the aniline, stirring and refiltering. The phrase "purified by washing" (claim 7) means only pouring the aniline over the filter cake on the filter, which is technically a more simple, but less effective action.

It is respectfully submitted that the foregoing is a full and complete response to the Office Action and that all the claims are allowable for at least the reasons indicated. An early indication of their allowability by issuance of a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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